

Role of Organic Farming in Sustainable Environment and Agriculture System in India

(A study of Hajipur Village in Alwar Region)

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Abstract:

In modern age, increasing pollution levels in every sphere of life is the key challenge in sustainable development of our environment. Increasing demands and lavish life style of people causes environmental deterioration. Our agricultural system is also affected by pollution. Modern agricultural practices such as use of synthetic fertilizers, pesticides etc. to maximize crop yield contributes in environmental pollution. These approaches ultimately disturb the nutrient balance of soil and therefore reduce soil fertility. To deal with the existing problem, Organic farming provides a natural way of crop cultivation by using environment friendly, animal and plant based local organic resources that are highly enriched in nutrients required for crop plants. It enhances the microbial activities and increases soil health.

Key words: Organic Farming, Pot composting, vermicomposting, challenge in India.

Introduction:

The approach of organic farming is depended upon variety of building elements. Organic manure, Crop rotation, Vermicomposting, Nitrogen fixing microorganisms, organic residue, crop residue, bio fertilizers, bio pesticides, kitchen waste, sludge and biogas are some of the main elements. These are proved to be very useful in maintaining soil health and texture. Their use is ecofriendly and helps in developing sustainable agriculture. Apart from these, the organic agricultural approach follows some basic principles of Health, Ecology, Fairness and Care. These principles are the core of organic agriculture that ensures sustainable development. In organic farming, more emphasis is given to the environmental health. Due to its nature friendly approach, it helps in reducing soil, water and air pollution. Therefore, acts as natural tool for environmental protection and sustainable development. Farmer's use crop rotation, bio fertilizers etc. to maintain enrichment of nitrogen and other essential crop nutrients. Use of chemicals in the field is prohibited and ecofriendly products are taken into consideration. Vegetables are also grown in the field using the organic farming approach, ensuring availability of organic vegetables in the food markets.

Main Principal of organic farming in India:

There are four principles of organic agriculture. These are as follows:

Principle of health

Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health of ecosystems - healthy soils produce healthy crops that foster the health of animals and people. Health is the wholeness and integrity of living systems. It is not simply the absence of illness, but the

maintenance of physical, mental, social and ecological well-being. Immunity, resilience and regeneration are key characteristics of health.

Principle of Ecology

Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them.

This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops this is the living soil; for animals it is the farm ecosystem; for fish and marine organisms, the aquatic environment.

Principle of Fairness

Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings.

This principle emphasizes that those involved in organic agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties - farmers, workers, processors, distributors, traders and consumers. Organic agriculture should provide everyone involved with a good quality of life, and contribute to food sovereignty and reduction of poverty. It aims to produce a sufficient supply of good quality food and other products.

Principle of Care

Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. Organic agriculture is a living and dynamic system that responds to internal and external demands and conditions. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being. Consequently, new technologies need to be assessed and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken.



Area of the Research Study:

Village:Hajipur/Dadhikar:

Block/Tehsil/District: Alwar

State:Rajasthan

About Hajipur/Dadhikar:

According to Census 2011 information the location code or village code of Hajipur village is 072761. Hajipur village is located in Alwar Tehsil of Alwar district in Rajasthan, India. It is situated 10km away from Alwar, which is both district & sub-district headquarter of Hajipur village. As per 2009 stats, Hajipur village is also a gram panchayat.

How to prepare Organic Manure at Home:

Organic manures are natural products used by farmers to provide food for the crop plants. Organic manures are beneficial in the cultivation of crops. They increase the organic matter in the soil which in turn releases the plant food in available from the use of crops. Organic manures enable soil to hold more water and also help to improve the drainage in clay soils. They even provide organic acids that help to dissolve soil nutrients and make them available for plants. Organic manure is being increasingly popular for organic farming.

Method to prepare organic manure

It is very simple to prepare organic manure at home. You can convert your daily dustbins into rich, organic manure and grow flowers, vegetables or plant with it.

1. Pot Composting

1. First, segregate your household waste into dry and wet in your kitchen. Leftovers of food, fruit peels, and tea bags are wet waste whereas paper, plastic and packaging area dry waste.
2. Secondly, put both these wastes in two different containers in the kitchen. When the wet waste container is full, put its contents into the first compost pot.
3. Then add dry leaves of the same quantity as the waste and semi-composted material, buttermilk or cow dung to start with the decomposition process.
4. Turn the pile around every other day. Keep the pile at the right level of dampness. If it is too wet, add dry leaves and stir and if it is too dry add water and stir.
5. Once it is full, leave the pot open for 30-45 days for the composition to happen. Then move the semi-composted matter into a larger container or bin.
6. After two months the waste will convert into rich compost that can be used or sold as manure.



2. Vermicomposting

1. Collect shredded newspaper, shredded cardboard, coconut fibres and dry cow dung cakes.
2. Get a large plastic tub and soak these in water, squeeze out the excess water and place these materials at the bottom of the worm bin.
3. Next, buy some earthworms from the soil they live in. Add half done compost to this and also add kitchen waste to this once in two or three day.
4. Don't feed it meat, dairy or fatty food. Limit the use of citrus fruits and Peel in your Vermicompost Bin.
5. Don't use anything acidic, stick to the fruits and vegetable peel, eggshells, coffee grounds, tea bags, and tea leaves.



3. The Bokashi Method

1. Add kitchen daily waste to the airtight drum for fermentation.
2. Might see maggots the next day around the rim. Then add Bokashi powder.
3. Ensure that the drum has a tap which can drain a small amount of the liquid generated from time to time. This liquid will smell like molasses, bran and vinegar.

4. Around the 17th day, there will be some white fungus grown in the drum showing the fermentation. The white mould is a beneficial fungus which helps suppress pathogens. If you have white mould, it means that your fermentation is going well.
5. Collect kitchen waste in the Bokashi drum for a month and then let it sit for 18 days.
6. Mix some of the drum's contents with semi-done compost and put this mixture in a tub.
7. Dig a trench and then put the fermenting wet waste in it and cover it up.
8. After three weeks black compost will be ready.

4. Egg Shells Manure

Can make a slow release calcium fertilizer by rinsing out the eggshells with water and drying them on a window sill to stop them growing mold. Once dry, grind the egg shells up in a blender or with a mortar and pestle. Store in a glass jar. Eggshells contain about 95% calcium carbonate which is the same ingredient as lime, a popular soil amendment used to reduce soil acidity and improve fertility.



Some grounds are prepared for Organic Manure in Alwar Area.





Benefits of Compost

1. Maintains soil fertility level.
2. Increases the nutrient level of the soil or improve the soil's physical condition by improving soil structure and aeration.
3. Increases the infiltration capacity of the soil, thus reducing surface runoff.
4. Helps to retain plant nutrients and moisture.
5. Well-decomposed compost buffers soil reaction and controls soil temperature.
6. It also increases soil microbial activity which helps mineralization of applied chemical fertilizers, making them more available to crops.

Nutrients content in Organic Manure

	Imperial			Metric		
	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Slurry						
Total nutrients contained	Units/1,000galls			kg/m ³		
Cattle slurry 6% DM	23	11	29	2.6	1.2	3.2
Pig slurry 4% DM	32	16	22	3.6	1.8	2.4
FYM						
Total nutrients contained	Units/ton			kg/tonne		
Cattle	12	6	16	6	3.2	8
Pig	14	12	16	7	6	8
Broiler litter	60	50	36	30	25	18
Layer	38	28	19	19	14	9.5

Average nutrient content of bulky manure

Manure	Percentage content		
	N	P ₂ O ₅	K ₂ O
Animal refuse	0.3-0.4	0.1-0.2	0.1-0.3
Cattle dung,fresh	0.4-0.5	0.3-0.4	0.3-0.4
Horse dung ,fresh	0.5 -0.5	0.4-0.6	0.3-1.0
Poultry manure,fresh	1.0-1.8	1.4-1.8	0.8-0.9
Sewage sludge,dry	2.0-3.5	1.0-5.0	0.2-0.5
Sewage sludge, activate dry	4.0-7.0	2.1-4.2	0.5-0.7
Cattle urine	0.9-1.2	trace	0.5-1.0
Horse urine	1.2-1.5	trace	1.3-1.5
Human urine	0.6-1.0	0.1-0.2	0.2-0.3
Sheep urine	1.5-1.7	trace	1.8-2.0
Ash, coal	0.73	0.45	0.53
Ash,household	0.5-1.9	1.6-4.2	2.3-12.0
Ash,wood	0.1-0.2	0.8-5.9	1.5-36.0
Rural compost,dry	0.5-1.0	0.4-0.8	0.8-1.2
Urban compost,dry	0.7-2.0	0.9-3.0	1.0-2.0
Farmyard manure,dry	0.4-1.5	0.3-0.9	0.3-1.9
Filter-press cake	1.0-1.5	4.0-5.0	2.0-7.0
Rice hulls	0.3-0.5	0.2-0.5	0.3-0.5
Groundnut husks	1.6-1.8	0.3-0.5	1.1-1.7
Banana,dry	0.61	0.12	1.00
Cotton	0.44	0.10	0.66

Review of Literature:

Several studies related with different aspects of organic farmings.

Ramesh P. Singh Mohan and RaoSubha (2005), Organic farming: It relevance to the Indian context. Present paper considering the potential environmental benefits of organic production and its compatibility with integrated agricultural approaches to rural development, organic agriculture may be considered as a developed vehicle for developing countries like India in Practical.

Prabhakar Shetty R.K. (2007), Social perspectives of organic farming. Present paper discuss as organic farming has the potential to provide positive externalities in social aspects like job opportunities and rural development.

Jadhav A.S. Gaikwad C.B. Shaikh A.A. and Tumbare A.D. (2001), Organic farming in the pest, its relevant in the present and the future agriculture it studies that there is a growing concern about the health and the environmental hazards of chemical-based intensive agriculture.

Kikani B.K. (2007), Limitations of microbial technology for organic farming. He studies that the rural economy is facing a challenge of over dependence on synthetic input an the increase the price of these inputs further, the Indian Agriculture face the market competition due to the globalization of trade.

Gahukar R.T. (2006), Potential and use of bio-fertilizers in India. Present paper stated that, Bio-fertilizers are natural and organic products. They help to provides and keep in the soil all the materials and micro-

organism required for the plant growth.

Murthy K. Srinivasa and Nigam G.L. (2001), Organic farming and pest management. They stated that, organic farming systems, water management, balanced use of fertilizers, use of bio-pesticides and botanicals form part of integrated pest management strategies to control that losses owing to pests and diseases (10 to 30 percent) hole to successful farming.

Telashikar S.C. and Mehta V.B. (2007), they attempted to find out the quality of organic inputs and their standards for organic farming.

Mayande V.M. (2007), He studied on crop recycles. Major sources for organic farming crop residues are utilized for different purposes since the inception of agriculture.

KaurJaswinder and Kalra R.K. (2006).Organic farming in Punjab- A case study this paper is an attempt to know the type of farmers engaged in organic farming background and functioning of the concerned private firms and identify the problems faced by the farmers along with the reasons for practicing organic farming.

Gaur A.C. (2001), Organic manure a basic input in organic farming. The paper explains the important of organic manure in organic farming. Many of growing successfully crops like coconut, spices, banana, grapes etc. with the liberaluse of organic manures.

Pal S.S., Singh Ravindra, BiswasChinmay and Jat M.C. (July-2005), Prospects and problems of growing crops in upper genetic plains region. This study focused that green revolution technology has undoubtedly increased production and labor efficiency. But it showed remarkable side effects on field and farm-level diversity as well as on environment.

Rao S.S. and Shaktawat (Dec.2000), He explain in his studies that the fertilizer need of a crop in cropping system mainly depends on the characteristics of preceding crop and kind and quantities of fertilizers applied.

ALI Shaviquea, Khan Iram and Ali Ayeshas (Jan.2001), Friendly earthworms. This work highlight the important soil organisms apart from enriching the soil, they are now increasingly being recognized as indicators of soil health too.

DaglaHarchand R andShekhawat N.S. (2006), Origin of Agriculture. The present paper addresses the history of agriculture and the origin of agriculture was the other great change for humanity after the mastery of fire.

Table 1. Percentage of area under organic farming in thetotal cultivated area of different countries of the world (Roychowdhury et al., 2015) .

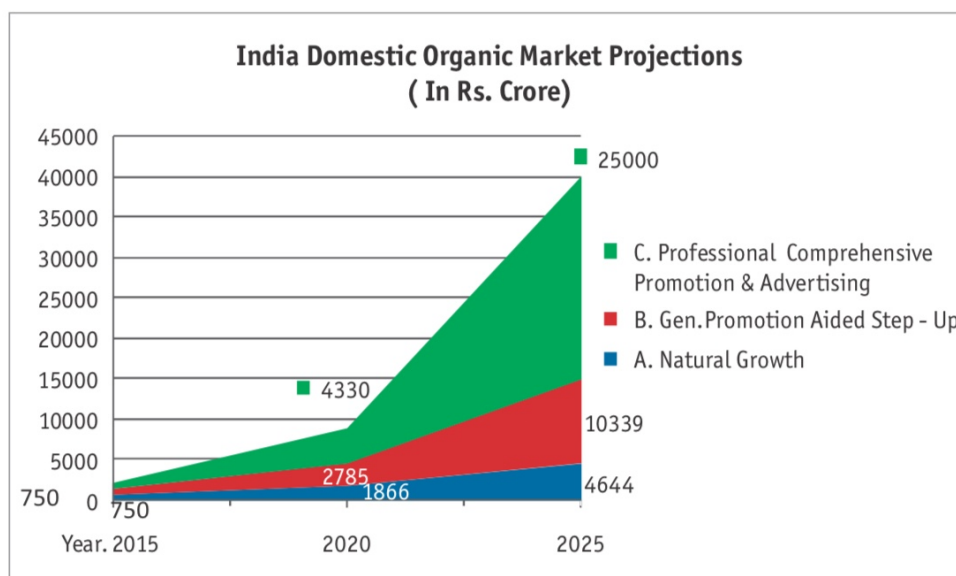
S. No.	Country %	Area under Organic farming
1	USA	0.23
2	UK	4.22
3	Germany	4.10
4	Argentina	1.70
5	Austria	8.40
6	Australia	2.20
7	Japan	0.10
8	Switzerland	7.94
9	South Africa	0.05

10	Italy	3.70
11	India	0.03
12	Pakistan	0.08
13	Srilanka	0.05

Organic farming in India:

Organic farming was practiced in India since thousands of years. The great Indian civilization thrived on organic farming and was one of the most prosperous countries in the world, till the British ruled it.

In traditional India, the entire agriculture was practiced using organic techniques, where the fertilizers, pesticides, etc., were obtained from plant and animal products. Organic farming was the backbone of the Indian economy and cow was worshipped (and is still done so) as a god. The cow, not only provided milk, but also provided bullocks for farming and dung which was used as fertilizers.



Major Problems and Constraints for Organic Farming in India:

Lack of Awareness:

The most important constraint felt in the progress of organic farming is the inability of the government policy making level to take a firm decision to promote organic agriculture.

Output Marketing Problems:

It is found that before the beginning of the cultivation of organic crops, their marketability and that too at a premium over the conventional produce has to be assured. Inability to obtain a premium price, at least during the period required to achieve the productivity levels of the conventional crop will be a setback.

Shortage of Bio-mass:

Many experts and well informed farmers are not sure whether all the nutrients with the required quantities can be made available by the organic materials. Even if this problem can be surmounted, they are of the view that the available organic matter is not simply enough to meet the requirements.

Inadequate Supporting Infrastructure:

In spite of the adoption of the NPOP during 2000, the state governments are yet to formulate policies and a credible mechanism to implement them.

High Input Costs:

The small and marginal farmers in India have been practicing a sort of organic farming in the form of the traditional farming system. They use local or own farm renewable resources and carry on the agricultural practices in an ecologically friendly environment.

Conclusion:

Organic food production costs are higher in the developed countries as organic farming is labor intensive and labor is costly in these countries. However, in a country like India, where labor is abundant and is relatively cheap, organic farming is seen as a good cost effective solution to the increasing costs involved in chemical farming. The increasing demand for organic food products in the developed countries and the extensive support by the Indian government coupled with its focus on agri-exports are the drivers for the Indian organic food industry.

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